

REMARKS

Status of Claims

Claims 25, 27-30, and 33-48 are pending and have been rejected under 35 U.S.C. §103. Claims 25 and 48 have been amended. Support for the amendments to the claims is found at least in the published application WO 2005/069308, pages 11-12, claim 18 of the foregoing application, and paragraph 50 of the substitute specification. Claims 1-24, 26, 31, and 32 have been cancelled in previous correspondence. Claims 25, 27-30, and 33-48 remain for consideration upon entry of the present Amendment. No new matter has been added.

Drawing Objections

The Examiner has objected to the drawings, indicating that Figures 1-3 should be designated by a legend such as – Prior Art – because allegedly only that which is old is illustrated, and has required correction.

Replacement drawings are enclosed herewith. Applicants believe that the replacement drawings are in compliance with the Examiner's requirement for corrective action. Accordingly, Applicants respectfully request that the Examiner withdraw the objections to the drawings.

Claim Rejections – 35 U.S.C. §103

Claims 25, 33, and 48 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over a) U.S. Patent No. 4,740,351 to Katsumizu et al. (hereinafter “Katsumizu”) in view of either one of U.S. Patent No. 2,558,523 to Luther (hereinafter “Luther”) or U.S. Patent No. 3,419,363 to Sliney (hereinafter “Sliney”); or b) U.S. Patent No. 5,363,422 to Nylund et al. (hereinafter “Nylund”) in view of either one of U.S. Patent No. 3,664,924 to Krawiec (hereinafter “Krawiec”) or U.S. Patent No. 5,178,825 to Johansson (hereinafter “Johansson ‘825”); or c) U.S. Patent No. 5,519,747 to Johansson et al. (hereinafter “Johansson ‘747”) in view of either one of U.S. Patent No. 4,594,216 to Feutrel (hereinafter “Feutrel”) or U.S. Patent No. 4,172,761 to Raven et al. (hereinafter “Raven”) and further in view of either one of Krawiec or Johansson ‘825.

Katsumizu with either one of Luther or Sliney

Katsumizu discloses a spacer 6 of a conventional design. Katsumizu also discloses a separate sleeve 21 to be used for protecting the fuel rod during the introduction thereof in a cell of the spacer. The sleeve 21 is made of a thin resilient material having overlapping ends that are not connected to each other. The sleeve 21 is removed from the fuel assembly when the fuel rod has been introduced into the spacer and is thus not present in the spacer when the spacer is introduced in a nuclear reactor. Consequently, the sleeve 21 is only a tool to be used when the fuel assembly is assembled. In addition, the sleeve 21 is made of a self-lubricating polyester film which would be destroyed in the environment in a reactor.

Katsumizu fails to disclose, teach, or suggest a spacer for holding a number of fuel rods, the spacer enclosing a plurality of sleeves, the sleeves being permanently connected to each other in the spacer, as recited in amended claims 25 and 48. A spacer for holding a number of fuel rods, the spacer enclosing a plurality of sleeves permanently connected to each other in the spacer, as recited in amended claims 25 and 48, is not a spacer in which the sleeves are not connected and have been removed and are not present when the spacer is introduced into a nuclear reactor, as in Katsumizu. Furthermore, the nickel material of the sleeve of the present invention is not self-lubricating.

Also, the fact that the polyester film of Katsumizu is said to be self-lubricating has inspired the Examiner to refer to Luther and Sliney, each of which allegedly teaches self-lubricating materials comprising a certain amount of nickel. In both Luther and Sliney, however, the nickel in itself is not self-lubricating – in Luther, the lubricating quality is derived from a flux of borax, soap, sulfur, and a fatty substance such as butter, and in Sliney the nickel is porous and impregnated with calcium fluoride. Therefore, the Examiner's reliance on Luther or Sliney with Katsumizu is misplaced, and the combination thereof with Katsumizu would still not lead one of ordinary skill in the art to the spacer as recited in amended claims 25 and 48.

Nylund with either one of Krawiec or Johansson '825

Nylund discloses a spacer having a first set of sleeves in an upper plane and a second set of sleeves in a lower plane. The sleeves do not have any overlapping ends. The Examiner is of the opinion that there is an overlap between the sleeves in the upper plane and the sleeves in the lower plane, and that the independent claims therefore would lack novelty. However, there is no

overlap of a first end and a second end of a sheet-shaped material formed to a cylindrical shape as clearly recited in the independent claims.

Nylund does not specify the material of the sleeves. In this regard, the Examiner refers to Krawiec and Johansson '825, which disclose a spacer of a nickel-based alloy. However, since none of these documents show any spacer having cells formed of a sheet-shaped material formed to a cylindrical shape with overlapping ends, the combination of Nylund with either Krawiec or Johansson '825, for at least these reasons, cannot lead one of ordinary skill in the art to the claimed invention.

Therefore, Nylund, in view of either Krawiec or Johansson '825, fails to disclose, teach, or suggest a spacer for holding a number of fuel rods, the spacer enclosing a plurality of sleeves, each sleeve being manufactured of a sheet-shaped material of a nickel-based alloy, the sheet-shaped material having a first end and a second end, and the sheet-shaped material being formed into a substantially cylindrical shape in such a way that the first end overlaps the second end, as recited in amended claims 25 and 48.

Johansson '747 with Feutrel or Raven and further with either Krawiec or Johansson '825

Johansson '747 discloses a cell spacer with a plurality of unit cells 10, each housing a fuel rod. The ends 16 and 18 are joined to adjacent units by welding. It is clear that the unit cells do not have any overlapping ends. This can be clearly seen in Figures 1 and 11 of Johansson '747. Therefore, Johansson '747 fails to disclose, teach, or suggest a spacer for holding a number of fuel rods, the spacer enclosing a plurality of sleeves, each sleeve being manufactured of a sheet-shaped material of a nickel-based alloy, the sheet-shaped material having a first end and a second end, and the sheet-shaped material being formed into a substantially cylindrical shape in such a way that the first end overlaps the second end, as recited in amended claims 25 and 48.

Raven, which has been discussed in previous Office Action responses, shows a spacer having a network of sleeves. The sleeves are made in pairs so that a sheet-shaped material is formed to a Figure-8-like configuration forming two cells for receiving two fuel rods. The configuration of the cells and the spacer of Raven are therefore completely different from the configuration of the spacer and the cell of the present invention, which has been previously disclosed and explained.

Also, Feutrel has been discussed in previous Office Action responses. Feutrel discloses a spacer made of spacer sheets in a crossing configuration. Some of the sheets have been elongated to form a cylindrical sleeve 14 above the spacers. The purpose of the cylindrical sleeve 14 is to receive a guide tube. This sleeve 14 is thus not formed of one sheet-shaped material as recited in claims 25 and 48, but of the material of four spacer sheets arranged in a square configuration.

Since none of Johansson '747, Raven, and Feutrel show a spacer having cells formed of a sheet-shaped material formed to a cylindrical shape with overlapping ends, the combination of Johansson '747 with either Raven or Feutrel cannot show such a spacer, and therefore, cannot lead one of ordinary skill in the art to the spacer recited in amended claims 25 and 48.

As stated above, Krawiec and Johansson '825 both disclose a spacer of a nickel-based alloy. However, since none of Johansson '747, Krawiec, and Johansson '825 show a spacer having cells formed of a sheet-shaped material formed to a cylindrical shape with overlapping ends, the combination of Johansson '747 with either Krawiec or Johansson '825 also cannot lead one of ordinary skill in the art to the spacer recited in amended claims 25 and 48.

Because all of the foregoing references, individually and in combination, fail to disclose, teach, or suggest each and every element of the invention as recited in amended claims 25 and 48, all of the references, individually and in combination, fail to teach all of the claim recitations of Applicants' invention. Consequently, because not all of the claim recitations are taught by the cited references, individually and in combination, Applicants' amended claims 25 and 48 are necessarily non-obvious, and Applicants respectfully request that the Examiner withdraw the rejections of claims 25 and 48.

Because claim 33 depends from claim 25, and because claim 25 is asserted to be non-obvious for the reasons presented above, claim 33 is necessarily non-obvious. Applicants, therefore, submit that claim 33 is allowable. Accordingly, Applicants respectfully request that the rejection of claim 33 be withdrawn.

Claims 27 and 34-47 have also been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Johansson '747 in view of either one of Feutrel or Raven and further in view of either one of Krawiec or Johansson '825.

Because claims 27 and 34-47 depend from claim 25, and because claim 25 is asserted to be non-obvious for the reasons presented above, claims 27 and 34-47 are likewise necessarily

non-obvious. Applicants, therefore, submit that claims 27 and 34-47 are allowable. Accordingly, Applicants respectfully request that the rejections of claims 27 and 34-47 be withdrawn.

Claims 28-30 and 45 have further been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Johansson '747 in view of either one of U.S. Patent No. 5,416,812 to Matzner or U.S. Patent No. 4,698,204 to Taleyarkhan.

Because claims 28-30 and 45 depend from claim 25, and because claim 25 is asserted to be non-obvious for the reasons presented above, claims 28-30 and 45 are necessarily non-obvious. Applicants, therefore, submit that claims 28-30 and 45 are allowable. Accordingly, Applicants respectfully request that the rejections of claims 28-30 and 45 be withdrawn.

Conclusion

Applicants believe that the foregoing amendments and remarks are fully responsive to the Office Action and that the claims herein are allowable. An early action to that effect is earnestly solicited.

If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is invited to telephone the undersigned.

Applicants believe that no fees are due with the submission of this Amendment. If any charges are incurred with respect to this Amendment, they may be charged to Deposit Account No. 503342 maintained by Applicants' attorneys.

Respectfully submitted,

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